

Having thus, described the invention, what is claimed is:

1     1.     An exhaust muffler for use with an internal combustion engine, said exhaust  
2     muffler comprising:  
3         a hollow main body having a plurality of bulkheads therein, said bulkheads  
4     dividing the interior of said main body into a plurality of expansion chambers;  
5         said main body being connectable to an exhaust pipe of an internal combustion  
6     engine;  
7         a plurality of communicating pipes fixed in said main body so as to connect the  
8     expansion chambers; and  
9         a spark arrester which is removably attachable to said main body and which  
10    comprises a tail pipe;  
11        wherein said muffler is configured such that when the spark arrester is attached to  
12    said main body, exhaust flow is made to pass through at least one bulkhead three times  
13    by the spark arrester installed so as to connect the expansion chambers and by the  
14    plurality of communicating pipes fixed so as to connect the expansion chambers,  
15        and when the spark arrester is removed, exhaust flow may pass through the  
16    communicating pipes and may bypass one of the plurality of expansion chambers so as to  
17    be released to the outside.

1     2.     An exhaust muffler for use with an internal combustion engine, said exhaust  
2     muffler comprising:

3           a hollow main body having a plurality of bulkheads therein, said bulkheads  
4   dividing the interior of said main body into a plurality of expansion chambers;  
5           said main body being connectable to an exhaust pipe of an internal combustion  
6   engine;  
7           a plurality of communicating pipes fixed in said main body so as to connect the  
8   expansion chambers; and  
9           a spark arrester which is removably attachable to said main body and which  
10   comprises a tail pipe,  
11          wherein said muffler is configured such that when the spark arrester is installed,  
12   exhaust flow is made to pass through at least one bulkhead three times by the spark  
13   arrester installed so as to connect the expansion chambers and by the plurality of  
14   communicating pipes fixed so as to connect the expansion chambers,  
15          and when the spark arrester is removed, exhaust flow may pass straight through a  
16   through-hole opening in each of the bulkheads and outwardly from said main body so as  
17   to be released outside of said exhaust muffler.

1   3.     The exhaust muffler for an internal combustion engine of claim 2, wherein a seal  
2   is provided between one of said bulkheads and the spark arrester, and wherein the seal  
3   comprises a sliding part or elastic part permitting extension and retraction of the tail pipe  
4   in the lengthwise direction thereof relative to said bulkhead.

1   4.     An exhaust muffler system for use with an internal combustion engine, said  
2   exhaust muffler system comprising:

3           a hollow main body defining an enclosed space therein, said main body having  
4   first and second bulkheads therein which operate to separate said enclosed space into a  
5   plurality of expansion chambers, said second bulkhead having a hole formed  
6   therethrough for receiving a spark arrester;  
7           said main body being connectable to an exhaust pipe of an internal combustion  
8   engine;  
9           a plurality of communicating pipes fixed in said main body so as to connect the  
10   expansion chambers;  
11          a regular spark arrester which is selectively removably attachable to said main  
12   body to define a regular configuration of said muffler system for use in public road travel,  
13   and which comprises a tail pipe, wherein a portion of said regular spark arrester fits  
14   through said hole in said second bulkhead; and  
15          a racing spark arrester which is alternately attachable to said main body to define  
16   a racing configuration of said muffler system, wherein said hole in said second bulkhead  
17   is left open and unobstructed in said racing configuration.

1   5. The exhaust system of claim 4, wherein said bulkheads, said communicating pipes and  
2   said regular spark arrester cooperate to define an exhaust flow path through said main  
3   body in the regular configuration of said system, said flow path passing through said  
4   second bulkhead three times before exiting from said tail pipe.

1   6. The exhaust system of claim 4, further comprising a seal for placement between one of  
2   said bulkheads and the regular spark arrester, and wherein the seal is configured to permit

3 extension and retraction of the tail pipe in the lengthwise direction thereof relative to said  
4 bulkhead.

1 7. The exhaust system of claim 4, wherein the first bulkhead has a hole formed  
2 therethrough to slidably receive a front end of said spark arrester.

1 8. The exhaust system of claim 7, further comprising a seal for placement between said  
2 first bulkhead and the regular spark arrester, wherein the seal is configured to permit  
3 extension and retraction of the tail pipe in the lengthwise direction thereof relative to said  
4 bulkhead.

1 9. An exhaust muffler system for use with an internal combustion engine, said exhaust  
2 muffler system comprising:

3 a hollow main body defining an enclosed space therein, said main body having a  
4 plurality of bulkheads therein which operate to separate said enclosed space into a  
5 plurality of expansion chambers, at least one of said bulkheads having a hole formed  
6 therethrough for receiving a spark arrester;

7 said main body being connectable to an exhaust pipe of an internal combustion  
8 engine;

9 a plurality of communicating pipes fixed in said main body so as to connect the  
10 expansion chambers;

11           a regular spark arrester which is selectively removably attachable to said main  
12   body to define a regular configuration of said muffler system for use in public road  
13   travel; and  
14           a racing spark arrester which is alternately attachable to said main body to define  
15   a racing configuration of said muffler system.

1           10. The exhaust system of claim 9, wherein said bulkheads, said communicating  
2   pipes and said regular spark arrester cooperate to define an exhaust flow path through  
3   said main body in the regular configuration of said system, said flow path passing  
4   through one of said bulkheads three times before exiting from said tail pipe.

1           11. The exhaust system of claim 9, further comprising a seal for placement  
2   between one of said bulkheads and the regular spark arrester, and wherein the seal is  
3   configured to permit extension and retraction of the tail pipe in the lengthwise direction  
4   thereof relative to said bulkhead.